

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method of detecting motion in a video surveillance system, comprising:
receiving a plurality of video image frames from a video camera that is positioned to image an object;

comparing a sequence of video image frames to generate a map of differences between sequential video image frames and based on the map of differences determining if a position of the object is changing, and if so, generating a signal indicative of movement of the object.

2. The method of Claim 1, wherein each video image frame comprises a plurality pixels each having one or more image parameters, wherein the determination if the position of the object is changing is made by:

comparing one or more image parameters of pixels in a first video image frame and a second video image frame, thereby creating a difference value of the one or more image parameters;

determining if the difference value exceeds a predetermined threshold and, if so, marking the map with a point where the one or more image parameters of the first and second video image frame differ by more than the predetermined threshold;

comparing the second video image frame to a third video image frame to produce a second map with points where the one or more image parameters differ by more than the predetermined threshold; and

comparing the first and second maps to detect movement of the object.

3. The method of Claim 2, wherein the one or more image parameters are compared by comparing an intensity value of the pixels.

4. The method of Claim 2, wherein the maps are compared by:

calculating a first location in the first map based on the points where the one or more of the image parameters differ by more than the predetermined threshold;

calculating a second location in the second map based on the points where one or more image parameters differ by more than the predetermined threshold; and

comparing the first and second locations to determine if the object is moving.

5. The method of Claim 4, further comprising:

comparing the first and second locations to determine a direction of movement of the object;

comparing the determined direction of movement with a user defined direction;
and

generating a signal indication the movement of the object, if the user defined direction matches the determined direction of movement.

6. The method of Claim 4, further comprising:

comparing the first and second locations to determine a direction of movement of the object;

determining a horizontal and a vertical component of the determined direction of movement;

generating a signal, if the horizontal or vertical components match the user-defined direction.

7. The method of Claim 6, wherein the user defined direction is horizontal, wherein the signal is generated if the horizontal component is greater or equal to the vertical component.

8. The method of Claim 6, wherein the user defined direction is vertical, wherein the signal is generated if the vertical component is greater or equal to the horizontal component.

9. The method of Claim 1, wherein each video image frame of the plurality of video image frames is divided into a plurality of cells, wherein cell comprises a plurality of pixels having an intensity value, wherein the determination if the object is changing is made by:

determining differences in pixel intensities between sequential video image frames;

determining if the differences exceed a predetermined threshold and, if so, generating a map of where the differences exceed the threshold, wherein the map comprises a plurality of active and non-active cells; and

determining if a number of adjacent cells is greater than a predetermined number, and if so, creating a object position value, wherein the determination of whether the position of the object is changing is made if the number of adjacent cells is greater than a predetermined number.

10. A motion sensing system comprising:

a video camera;

a processing unit electronically coupled to the video camera for executing the program instructions comprising:

receiving a plurality of video image frames from a video camera that is positioned to image an object;

comparing a sequence of video image frames to generate a map of differences between sequential video image frames and based on the map of differences determining if a position of the object is changing, and if so, generating a signal indicative of movement of the object.

11. The motion sensing system of Claim 10, wherein said processing unit comprises:

a central processing unit;

a video input processing unit;

a memory device; and

a data bus, wherein the data bus is electronically coupled to the central processing unit, the video input processing unit, and the memory device.

12. The motion sensing system of Claim 11, further comprising:

a video display;

an key input device, wherein the video display and the key input device are electronically coupled to the processing unit; and

13. A computer-readable medium having computer-executable instructions for performing the steps recited in Claim 1.